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QUANTITATIVE DETERMINATION OF STRATOSPHERIC AEROSOL CHARACTERISTICS

In February, 1975 we received the following materials:

S191-069-10-65-SKYBET-R1

S191-069-13-78-SKYBET-R1

S191-069-09-61-SKYBET-R1

Due to the lack of complete data (SKYBET and sensor data) we were obliged to limit our efforts to Pass 18. In January we reported the apparent detection of aerosols in this data set acquired over the South Atlantic ocean. In February we have verified the existence and have begun to establish some of the aerosol characteristics. Enclosed are plots of some of the results showing the intensity fall-off as a function of wavelength. On the same chart is the fall-off of the Rayleigh atmosphere component as would be seen if the Rayleigh atmosphere (Elterman, 1968) were viewed with the S192 system. The deviation from a Rayleigh atmosphere is attributed to the aerosol contribution, neglecting other contributors. Also plotted are the measured values smoothed with a weighted average of adjacent sample points (same scan). Several charts are enclosed corresponding to different sample points, each successive point at a higher altitude than the previous point. It is apparent that the reduced signal-to-noise ratio of the higher altitudes distorts the information.

We are pleased with these early results and feel we are gaining value experience with the peculiarities of the data. One peculiarity is the type and level of noise in the data; we are presently experimenting with several techniques to better extract the signal from the high noise level.

We are not yet satisfied with our algorithm to scale although it would serve if we were unable to improve it. Also, we have been unsuccessful in inverting the brightness signature for the profile of attenuation coefficients. We feel this is due both to the noise level in the data and to the inaccurate scaling of the altitude. These are two areas that will receive additional attention in the coming month.

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Monthly Report, Feb. 1975 (Boeing Co.,
Seattle, Wash.) 11 p HC \$3.25

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